

benefit. Those claims read as follows:

1. A battery comprising a liquid container, a magnesium electropositive electrode inside the container and having an exterior terminal, a fused cuprous chloride electronegative electrode, and a terminal connected with said electronegative electrode.
10. In a battery, the combination of a magnesium electropositive electrode, and an electronegative electrode comprising cuprous chloride fused with a carbon catalytic agent.

The Supreme Court in that case acknowledged that the Adams battery had “certain valuable operating advantages over other batteries”. However, those advantages were not set forth in the claims and need not be.

What is important is that there be recited in the claims the structure that enables those critical or desirable functions to be achieved. In this case the structural features appear as follows:

...wherein all the recesses (21) have the same dimensions and shapes, or wherein a few differently configured groups of recesses are provided in the carrier elements (4,5), all recesses (21) of one group of recesses (21) having the same dimensions and shapes...

and

...characterized in that the insertion elements (13, 14, 26) are designed such that they are able to carry or secure either a group of at least two conveying members which are all located on one side of the conveying path or at least one treatment device or an ensemble of at least one conveying member and at least one treatment device.

Therefore, just as in the Adams battery case, the structure is present in the claims that supports the critical, benefit, the structure is present in the instant claims of the present application that supports the benefit of interchangeability.

The Adams battery case remains the seminal case on this point. While it was decided in 1966, it was also referenced in the Supreme Court’s more recent decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), which is the most recent Supreme Court’s decision in a patent case.

A copy of the Adams battery decision is attached hereto for the Examiner’s convenience.

In addition to the benefit of the interchangeability of the insertion elements, there are

other benefits to the present invention, as are supported in the specification, including:

- where different workpieces are to be treated, only the insertion elements and modules must be fitted to the requirements of those workpieces; unlike Henington where the walls of the tank 12 would have to be modified to accommodate changes in the workpiece (boards);
- the treatment tank and carrier walls of the present invention can be manufactured independently of the insertion elements, with it only be necessary that the insertion elements must fit into the recesses in the carrier elements; the insertion elements may comprise either two conveying members or a conveying member and a treatment device so that a great many carrier elements may be manufactured independently of the manufacture of a treatment unit, presenting a cost efficiency in manufacturing;
- when at least two conveying members are present on a single insertion element on one side of a conveying plane, a considerably smaller clearance may be achieved between the conveying members, a feature which is especially important for foil treatment.

The undersigned plans to telephone the Examiner within the next few days, to discuss this issue, but wished to provide the Examiner beforehand with the benefit of consideration of the Adams battery case, on the remaining issue in the instant application.

Reconsideration of the Examiner's suggestion that the critical benefit of the present invention must be recited in the claims is respectfully requested, along with the allowance of the application.

No fee is believed to be necessary, but in the event that a fee is required the Commissioner is hereby authorized to charge any additional fees associated with this communication, or credit any overpayment, to Paul & Paul deposit account no. 16-0750.

Respectfully submitted,

/JFM/

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*[383 US 39]

*UNITED STATES, Petitioner,

v

BERT N. ADAMS et al.

383 US 39, 15 L ed 2d 572, 86 S Ct 708

[No. 55]

Argued October 14, 1965. Decided February 21, 1966.

SUMMARY

Persons having an interest in a patent on a nonrechargeable electrical battery using magnesium and cuprous chloride electrodes in a water electrolyte sued the United States in the United States Court of Claims for infringement and breach of an implied contract to pay compensation for use of the invention. The Court of Claims held the patent valid and infringed (165 Ct Cl 576, 330 F2d 622), and about 6 months later, on a motion to amend the judgment, it held that no contract had been established.

On certiorari to review only the patent-validity issue, the Supreme Court of the United States affirmed. In an opinion by CLARK, J., expressing the views of seven members of the Court, it was held that (1) the 90-day period for filing the petition for certiorari began with the date of decision on the contract issue, and (2) the invention was both novel and nonobvious.

WHITE, J., dissented without opinion.

FORTAS, J., did not participate.

HEADNOTES

Classified to U. S. Supreme Court Digest, Annotated

Appeal and Error § 882(2) — time for filing petition for certiorari

1. In a suit against the United States in the Court of Claims for patent infringement and breach of an implied contract to pay compensation for the use of the invention, in which the trial commissioner held that the pat-

ent was valid and infringed in part but that no contract had been established, the Court of Claims adopted these findings but initially reached only the patent questions and decided the contract claims on a timely motion to amend the judgment, the 90-day period for filing a petition of cer-

ANNOTATION REFERENCES

Amendment of judgment as affecting time for taking or prosecuting appellate review proceedings. 97 L ed 255; 21 ALR 2d 285.

Computation of time for seeking review in United States Supreme Court. 87 L ed 257.

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Appeal and Error § 882(2) — time for filing petition for certiorari

2. The 90-day period for filing the petition for certiorari begins with the date of the Court's decision on the contract issue, and not with the date of the Court's decision on the patent issue.

Appeal and Error § 882(2) — time for filing petition for certiorari

3. There is no requirement that a patent be valid in order for the Supreme Court to exercise its jurisdiction to review a judgment of the Court of Claims.

Patents § 111

4. Novelty is a question of fact, and the utility of an invention is a question of law.

Patents § 112

5. While the invention is not used in the light of the prior art, the invention is not novel.

Patents § 69

6. A nonrechargeable battery consisting of a magnesium electrode, a cuprous chloride electrolyte, and an electrode in a water electrolyte and was operable.

Patents § 69

7. An invention which fails to be novel is not entitled to a patent.

tiorari with the Supreme Court begins with the date of decision on the contract issue, since the Government's liability is inextricably linked with the alleged contract action which was not determined until the latter judgment.

Appeal and Error § 882(2) — time for filing petition for certiorari

2. The 90-day period for filing a petition for certiorari with the Supreme Court runs from the date of the order overruling a timely motion to amend the judgment.

Appeal and Error §§ 963, 968 — certiorari — service

3. There is no merit in a contention that on a petition for certiorari the United States failed to comply with Supreme Court Rules 21(1) and 33 as to service, since the requirement is not jurisdictional, no prejudice resulted, and the failure was inadvertent.

Patents §§ 18, 19.1, 55 — patentability

4. Novelty and nonobviousness, as well as utility, are separate tests of patentability and all must be satisfied in a valid patent.

Patents § 123 — claims — construction with specifications

5. While the claims of a patent limit the invention, and specifications cannot be used to expand the patent monopoly, the claims are to be construed in the light of the specifications, and both are to be read with a view to ascertaining the invention.

Patents § 69 — novelty — battery

6. A nonrechargeable electrical battery consisting of a magnesium electrode, a cuprous chloride electrode, and an electrolyte of either plain or salt water, is novel where a previous foreign patent claiming magnesium as an electrode specified an acid electrolyte and was both dangerous and inoperable.

Patents §§ 60, 62 — novelty — previous unsuccessful invention

7. An inoperable invention or one which fails to achieve its intended result does not negative novelty, even though a foreign patent has been issued on it.

Patents § 27 — patentability — equivalence

8. There is no equivalency negating the patentability of a nonrechargeable electrical battery using magnesium and cuprous chloride electrodes on the ground that such electrodes were merely equivalent substitutions for zinc and silver chloride electrodes where the operating characteristics were different and therefore nonequivalent and the previous batteries were of a completely different type.

Patents § 19.1 — nonobviousness — combining known elements

9. A nonrechargeable electrical battery consisting of a magnesium electrode, a cuprous chloride electrode, and an electrolyte of plain or salt water, is nonobvious where its operating characteristics were unexpected and surpassed existing wet batteries, and to combine the elements known to the prior art, a person reasonably skilled in the prior art must ignore that batteries continuing to operate on an open circuit and which heated in normal use were not practical and that water-activated batteries were successful only when combined with electrolytes detrimental to the use of magnesium.

Patents § 19.1 — nonobviousness — disadvantages in old devices

10. While one who merely finds new uses for old inventions by shutting his eyes to their prior disadvantages does not thereby discover a patentable innovation, known disadvantages in old devices which would naturally discourage the search for new inventions may be taken into account in determining nonobviousness.

Patents § 19.1 — obviousness — factors

11. As bearing on the question of the obviousness of an invention, the court may consider that noted experts expressed disbelief in the invention, that several of the same experts subsequently recognized the significance of the invention and some even patented improvements on the same system, that in a crowded art replete with a century and a half of advancement the Patent Office found not one refer-

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ence to cite against the invention, and that as against the subsequently issued improvement patents, the Patent

Office found but three references prior to the invention in question, none of which was relied on against it.

APPEARANCES OF COUNSEL

John W. Douglas argued the cause for petitioner.

John A. Reilly argued the cause for respondents.

Briefs of Counsel, p 1069, *infra*.

OPINION OF THE COURT

*[383 US 40]

*Mr. Justice Clark delivered the opinion of the Court.

This is a companion case to No. 11, *Graham v John Deere Co.* 383 US 1, 15 L ed 2d 545, 86 S Ct 684, along with Nos. 37 and 43, *Calmar, Inc. v Cook Chemical Co.* and *Colgate-Palmolive Co. v Cook Chemical Co.* The United States seeks review of a judgment of the Court of Claims, holding valid and infringing a patent

*[383 US 41]

on a wet battery issued to *Adams. This suit under 28 USC § 1498 (1964 ed.) was brought by Adams and others holding an interest in the patent against the Government charging both infringement and breach of an implied contract to pay compensation for the use of the invention. The Government challenged the validity of the patent, denied that it had been infringed or that any contract for its use had ever existed. The Trial Commissioner held that the patent was valid and infringed in part but that no contract, express or implied, had been established. The Court of Claims adopted these findings, initially reaching only the patent questions, 165 Ct Cl 576, 330 F2d 622, but subsequently, on respondents' motion to amend the judgment, deciding the contract claims as well. 165 Ct Cl, at 598. The United States sought certiorari on the patent valid-

ity issue only. We granted the writ, along with the others, in order to settle the important issues of patentability presented by the four cases. 380 US 949, 13 L ed 2d 968, 85 S Ct 1090. We affirm.

I.

[1, 2] While this case is controlled on the merits by No. 11, *Graham*, 383 US 1, 15 L ed 2d 545, 86 S Ct 684, respondents have raised threshold issues as to our jurisdiction which require separate handling. They say that the petition for certiorari came too late, contending that the 90-day period for filing began with the date of the initial judgment rather than the date of the decision on the contract issue, citing *F. T. C. v Minneapolis-Honeywell Co.* 344 US 206, 97 L ed 246, 73 S Ct 245 (1952). We cannot agree; first, because that case did not involve a timely motion to amend the judgment¹ and, secondly, because here the Government's lia-

*[383 US 42]

bility was inextricably *linked with the alleged contract action which was not determined until the latter judgment.

[3] Nor is there merit in respondents' contention that the Government failed to comply with the requirements of our Rules 21(1) and 33 as to service, since these requirements are not jurisdictional, no

[2] 1. There a timely motion is filed, the time in such cases runs from the date of the order overruling the motion. See *Department of Banking v Pink*, 317 US 264, 267, 87 L ed 254, 256, 63 S Ct 233 (1942);

United States v Crescent Amusement Co., 323 US 173, 177, 89 L ed 160, 165, 65 S Ct 254 (1944); *Forman v United States*, 361 US 416, 426, 4 L ed 2d 412, 419, 80 S Ct 481 (1960).

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Return now to the merits.

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II.

The Patent in Issue and Its Back- ground.

The patent under consideration, US No. 2,322,210, was issued in 1943 upon an application filed in December 1941 by Adams. It relates to a nonrechargeable, as opposed to a storage, electrical battery. Stated simply, the battery comprises two electrodes—one made of magnesium, the other of cuprous chloride—which are placed in a container. The electrolyte, or battery fluid, used may be either plain or salt water.

The specifications of the patent state that the object of the invention is to provide constant voltage and current without the use of acids, conventionally employed in storage batteries, and without the generation of dangerous fumes. Another object is "to provide a battery which is relatively light in weight with respect to capacity" and which "may be manufactured and distributed to the trade in a dry condition and rendered serviceable by merely filling the container with water." Following the specifications, which also set out a specific embodiment of the invention, there appear 11 claims. Of these, principal reliance has been placed upon Claims 1 and 10, which read:

"1. A battery comprising a liquid container, a magnesium electropositive electrode inside the container and having an exterior terminal, a fused cuprous chloride electronegative electrode, and a terminal connected with said electronegative electrode."

*[383 US 43]

**"10. In a battery, the combina-

For several years prior to filing his application for the patent, Adams had worked in his home experimenting on the development of a wet battery. He found that when cuprous chloride and magnesium were used as electrodes in an electrolyte of either plain water or salt water an improved battery resulted.

The Adams invention was the first practical, water-activated, constant potential battery which could be fabricated and stored indefinitely without any fluid in its cells. It was activated within 30 minutes merely by adding water. Once activated, the battery continued to deliver electricity at a voltage which remained essentially constant regardless of the rate at which current was withdrawn. Furthermore, its capacity for generating current was exceptionally large in comparison to its size and weight. The battery was also quite efficient in that substantially its full capacity could be obtained over a wide range of currents. One disadvantage, however, was that once activated the battery could not be shut off; the chemical reactions in the battery continued even though current was not withdrawn. Nevertheless, these chemical reactions were highly exothermic, liberating large quantities of heat during operation. As a result, the battery performed with little effect on its voltage or current in very low temperatures. Relatively high temperatures would not damage the battery. Consequently, the battery was operable from 65° below zero Fahrenheit to 200° Fahrenheit. See findings at 165 Ct Cl, at 591-592, 330 F2d, at 632.

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Less than a month after filing for his patent, Adams brought his discovery to the attention of the Army and Navy. Arrangements were quickly made for demonstrations before the experts of the United States Army Signal Corps. The Signal Corps scientists who observed the demonstrations and who conducted

*[383 US 44]

further tests themselves did not believe the battery was workable. Almost a year later, in December 1942, Dr. George Vinal, an eminent government expert with the National Bureau of Standards, still expressed doubts. He felt that Adams was making "unusually large claims" for "high watt hour output per unit weight," and he found "far from convincing" the graphical data submitted by the inventor showing the battery's constant voltage and capacity characteristics. He recommended, "Until the inventor can present more convincing data about the performance of his [battery] cell, I see no reason to consider it further."

However, in November 1943, at the height of World War II, the Signal Corps concluded that the battery was feasible. The Government thereafter entered into contracts with various battery companies for its procurement. The battery was found adaptable to many uses. Indeed, by 1956 it was noted that "[t]here can be no doubt that the addition of water activated batteries to the family of power sources has brought about developments which would otherwise have been technically or economically impractical." See Tenth Annual Battery Research and Development Conference, Signal Corps Engineering Laboratories, Fort Monmouth, N. J., p 25 (1956). Also, see Finding No. 24, 165 Ct Cl, at 592, 330 F2d, at 632.

Surprisingly, the Government did not notify Adams of its changed views nor of the use to which it was putting his device, despite his repeated requests. In 1955, upon examination of a battery produced for the Government by the Burgess Company, he first learned of the Government's action. His request for compensation was denied in 1960, resulting in this suit.

*[383 US 45]

*III.

The Prior Art.

The basic idea of chemical generation of electricity is, of course, quite old. Batteries trace back to the epic discovery by the Italian scientist Volta in 1795, who found that when two dissimilar metals are placed in an electrically conductive fluid an electromotive force is set up and electricity generated. Essentially, the basic elements of a chemical battery are a pair of electrodes of different electrochemical properties and an electrolyte which is either a liquid (in "wet" batteries) or a moist paste of various substances (in the so-called "dry-cell" batteries). Various materials which may be employed as electrodes, various electrolyte possibilities and many combinations of these elements have been the object of considerable experiment for almost 175 years. See generally, Vinal, *Primary Batteries* (New York 1950).

At trial, the Government introduced in evidence 24 patents and treatises as representing the art as it stood in 1938, the time of the Adams invention.² Here, however, the Government has relied primarily

2. The references are listed in the opinion of the Court of Claims, 165 Ct Cl, at 590, 330 F2d, at 631.

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upon only six of these references³ which we may summarize as follows.

The Niaudet treatise describes the Marie Davy cell invented in 1860 and De La Rue's variations on it. The battery comprises a zinc anode and a silver chloride cathode. Although it seems to have been capable of working in an electrolyte of pure water, Niaudet says the battery was of "little interest" until De La Rue used a solution of ammonium chloride as an electrolyte. Niaudet also states that "[t]he capital advantage

*[383 US 46]

of this battery, *as in all where zinc with sal ammoniac [ammonium chloride solution] is used, consists in the absence of any local or internal action as long as the electric circuit is open; in other words, this battery does not work upon itself." Hayes likewise discloses the De La Rue zinc-silver chloride cell, but with certain mechanical differences designed to restrict the battery from continuing to act upon itself.

The Wood patent is relied upon by the Government as teaching the substitution of magnesium, as in the Adams patent, for zinc. Wood's patent, issued in 1928, states: "It would seem that a relatively high voltage primary cell would be obtained by using . . . magnesium as the . . . [positive] electrode and I am aware that attempts have been made to develop such a cell. As far as I am aware, however, these have all been unsuccessful, and it has been generally accepted that magnesium could not be commercially utilized as a primary cell electrode." Wood recognized that the difficulty with

magnesium electrodes is their susceptibility to chemical corrosion by the action of acid or ammonium chloride electrolytes. Wood's solution to this problem was to use a "neutral electrolyte containing a strong soluble oxidizing agent adapted to reduce the rate of corrosion of the magnesium electrode on open circuit." There is no indication of its use with cuprous chloride, nor was there any indication that a magnesium battery could be water-activated.

The Codd treatise is also cited as authority for the substitution of magnesium. However, Codd simply lists magnesium in an electromotive series table, a tabulation of electrochemical substances in descending order of their relative electropositivity. He also refers to magnesium in an example designed to show that various substances are more electropositive than others, but the discussion involves a cell containing an acid which would destroy magnesium within minutes. In short, Codd indicates, by inference, only that

*[383 US 47]

magnesium is a theoretically *desirable electrode by virtue of its highly electropositive character. He does not teach that magnesium could be combined in a water-activated battery or that a battery using magnesium would have the properties of the Adams device. Nor does he suggest, as the Government indicates, that cuprous chloride could be substituted for silver chloride. He merely refers to the cuprous *ion*—a generic term which includes an infinite number of copper compounds—and in no way suggests that cuprous chloride could be employed in a battery.

3. Niaudet, *Elementary Treatise on Electric Batteries* (Fishback translation 1880); Hayes U. S. Patent No. 282,634 (1883); Wood U. S. Patent No. 1,696,873

(1928); Codd, *Practical Primary Cells* (London 1929); Wensky British Patent No. 49 of 1891; and Skrivanoff British Patent No. 4,341 (1880).

The Government then cites the Wensky patent which was issued in Great Britain in 1891. The patent relates to the use of cuprous chloride as a depolarizing agent. The specifications of his patent disclose a battery comprising zinc and copper electrodes, the cuprous chloride being added as a salt in an electrolyte solution containing zinc chloride as well. While Wensky recognized that cuprous chloride could be used in a constant current cell, there is no indication that he taught a water-activated system or that magnesium could be incorporated in his battery.

Finally, the Skrivanoff patent depended upon by the Government relates to a battery designed to give intermittent, as opposed to continuous, service. While the patent claims magnesium as an electrode, it specifies that the electrolyte to be used in conjunction with it must be a solution of "alcoline, chloro-chromate, or a permanganate strengthened with sulphuric acid." The cathode was a copper or carbon electrode faced with a paste of "phosphoric acid, amorphous phosphorous, metallic copper in spangles, and cuprous chloride." This paste is to be mixed with hot sulfuric acid before applying to the electrode. The Government's expert testified in trial that he had no information as to whether the cathode, as placed in the battery, would, after having been mixed with the other chemicals

*[383 US 48]

prescribed, actually *contain cuprous chloride. Furthermore, respondents' expert testified, without contradiction, that he had attempted to assemble a battery made in accordance with Skrivanoff's teachings, but was met first with a fire when he sought to make the cathode, and then with an explosion when he attempted to assemble the complete battery.

IV.

The Validity of the Patent.

[4] The Government challenges the validity of the Adams patent on grounds of lack of novelty under 35 USC § 102(a) (1964 ed.) as well as obviousness under 35 USC § 103 (1964 ed.). As we have seen in *Graham v John Deere Co.*, ante 383 US 1, 15 L ed 2d 545, 86 S Ct 684, novelty and nonobviousness—as well as utility—are separate tests of patentability and all must be satisfied in a valid patent.

The Government concludes that wet batteries comprising a zinc anode and silver chloride cathode are old in the art; and that the prior art shows that magnesium may be substituted for zinc and cuprous chloride for silver chloride. Hence, it argues that the "combination of magnesium and cuprous chloride in the Adams battery was not patentable because it represented either no change or an insignificant change as compared to prior battery designs." And, despite "the fact that, wholly unexpectedly, the battery showed certain valuable operating advantages over other batteries [these advantages] would certainly not justify a patent on the essentially old formula."

[5] There are several basic errors in the Government's position. First, the fact that the Adams battery is water-activated sets his device apart from the prior art. It is true that Claims 1 and 10, *supra*, do not mention a water electrolyte, but, as we have noted, a stated object of the invention was to provide a battery rendered serviceable by the mere addition of water. While the claims of

*[383 US 49]

a *patent limit the invention, and specifications cannot be utilized to expand the patent monopoly, *Burns v Meyer*, 100 US 671, 672, 25 L ed 738 (1880); *McCarty v Lehigh*

[15 L ed 2d]

Valley R. Co. L ed 358, 30 it is fundamental to be construed with a view to the invention, *Sey* 516, 547, 2 Schriber-Sel Trust Co. 3: 61 S Ct 235 v Gilbert, Taken together, subject of disclosure, the latter electrolyte indicates that used. Further in issue, this include reference to electrolyte solution and certain application from mention of necessary elements other eight conclusion. respondents' feature was an astute practical first contact less than a application out that "no other liquid is used in the have to be to Charles (1942), R., his letter to merce (Mar The finding by the Court support this

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Valley R. Co. 160 US 110, 116, 40 L ed 358, 361, 16 S Ct 240 (1895), it is fundamental that claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention, *Seymour v Osborne*, 11 Wall 516, 547, 20 L ed 33, 39 (1871); *Schriber-Schroth Co. v Cleveland Trust Co.* 311 US 211, 85 L ed 132, 61 S Ct 235 (1940); *Schering Corp. v Gilbert*, 153 F2d 428 (1946). Taken together with the stated object of disclosing a water-activated cell, the lack of reference to any electrolyte in Claims 1 and 10 indicates that water alone could be used. Furthermore, of the 11 claims in issue, three of the narrower ones include references to specific electrolyte solutions comprising water and certain salts. The obvious implication from the absence of any mention of an electrolyte—a necessary element in any battery—in the other eight claims reinforces this conclusion. It is evident that respondents' present reliance upon this feature was not the afterthought of an astute patent trial lawyer. In his first contact with the Government less than a month after the patent application was filed, Adams pointed out that "no acids, alkalines or any other liquid other than plain water is used in this cell. Water does not have to be distilled. . . ." Letter to Charles F. Kettering (January 7, 1942), R., pp. 415, 416. Also see his letter to the Department of Commerce (March 28, 1942), R., p. 422. The findings, approved and adopted by the Court of Claims, also fully support this conclusion.

Nor is *Sinclair & Carroll Co. v Interchemical Corp.* 325 US 327, 89 L ed 1644, 65 S Ct 1143 (1945), apposite here. There the patentee had developed a rapidly drying printing ink. All that was needed to produce

such an ink was a solvent which evaporated quickly upon heating. Knowing that the boiling point of a solvent is an indication of its rate

*[383 US 50]

of *evaporation, the patentee merely made selections from a list of solvents and their boiling points. This was no more than "selecting the last piece to put into the last opening a jig-saw puzzle." 325 US, at 335, 89 L ed at 1649. Indeed, the Government's reliance upon *Sinclair & Carroll* points up the fallacy of the underlying premise of its case. The solvent in *Sinclair & Carroll* had no functional relation to the printing ink involved. It served only as an inert carrier. The choice of solvent was dictated by known, required properties. Here, however, the Adams battery is shown to embrace elements having an interdependent functional relationship. It begs the question, and overlooks the holding of the Commissioner and the Court of Claims, to state merely that magnesium and cuprous chloride were individually known battery components. If such a combination is novel, the issue is whether bringing them together as taught by Adams was obvious in the light of the prior art.

[6, 7] We believe that the Court of Claims was correct in concluding that the Adams battery is novel. *Skrivanoff* disclosed the use of magnesium in an electrolyte completely different from that used in Adams. As we have mentioned, it is even open to doubt whether cuprous chloride was a functional element in *Skrivanoff*. In view of the unchallenged testimony that the *Skrivanoff* formulation was both dangerous and inoperable, it seems anomalous to suggest that it is an anticipation of Adams. An inoperable invention or one which fails to achieve its in-

tended result does not negative novelty. *Smith v Snow*, 294 US 1, 17, 79 L ed 721, 731, 55 S Ct 279 (1935). That in 1880 Skrivanoff may have been able to convince a foreign patent examiner to issue a patent on his device has little significance in the light of the foregoing.

[8] Nor is the Government's contention that the electrodes of Adams were mere substitutions of pre-existing battery designs supported by the prior art. If the use of magnesium

*[383 US 51]

*for zinc and cuprous chloride for silver chloride were merely equivalent substitutions, it would follow that the resulting device—Adams'—would have equivalent operating characteristics. But it does not. The court below found, and the Government apparently admits, that the Adams battery "wholly unexpectedly" has shown "certain valuable operating advantages over other batteries" while those from which it is claimed to have been copied were long ago discarded. Moreover, most of the batteries relied upon by the Government were of a completely different type designed to give intermittent power and characterized by an absence of internal action when not in use. Some provided current at voltages which declined fairly proportionately with time.⁴ Others were so-called standard cells which, though producing a constant voltage, were of use principally for calibration or measurement purposes. Such cells cannot be used as sources of power.⁵ For these reasons we find no equivalency.⁶

4. It is interesting to note in this connection that in testing the Adams cell the Signal Corps compared it with batteries of this type. The graphical results of the comparison are shown in respondents' brief, p. 51.

5. The standard text in the art states: "The best answer to the oft-repeated question: 'How much current can I draw from my standard cell?' is 'None.'" Vinal,

[9, 10] We conclude the Adams battery was also nonobvious. As we have seen, the operating characteristics of the Adams battery have been shown to have been unexpected and to have far surpassed then-existing wet batteries. Despite the fact that each of the elements of the Adams battery was well known in

*[383 US 52]

the prior art, to combine *them as did Adams required that a person reasonably skilled in the prior art must ignore that (1) batteries which continued to operate on an open circuit and which heated in normal use were not practical; and (2) water-activated batteries were successful only when combined with electrolytes detrimental to the use of magnesium. These long-accepted factors, when taken together, would, we believe, deter any investigation into such a combination as is used by Adams. This is not to say that one who merely finds new uses for old inventions by shutting his eyes to their prior disadvantages thereby discovers a patentable innovation. We do say, however, that known disadvantages in old devices which would naturally discourage the search for new inventions may be taken into account in determining obviousness.

[11] Nor are these the only factors bearing on the question of obviousness. We have seen that at the time Adams perfected his invention noted experts expressed disbelief in it. Several of the same experts sub-

Primary Batteries, p. 212 (New York 1950); see also Ruben U. S. Patent No. 1,920,151 (1933).

6. In their motion to dismiss the writ of certiorari as improvidently granted, respondents asserted that the Government was estopped to claim equivalency of cuprous chloride and silver chloride. We find no merit in this contention and, therefore, deny the motion.

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sequently recognized the significance of the Adams invention, some even patenting improvements on the same system. Fischbach et al., U.S. Patent No. 2,636,060 (1953). Furthermore, in a crowded art replete with a century and a half of advancement, the Patent Office found not one reference to cite against the Adams application. Against the subsequently issued improvement patents to Fischbach, supra, and to Chubb, U. S. Re-issue Patent No. 23,883 (1954), it

found but three references prior to Adams—none of which are relied upon by the Government.

We conclude that the Adams patent is valid. The judgment of the Court of Claims is affirmed.

It is so ordered.

Mr. Justice **White** dissents.

Mr. Justice **Fortas** took no part in the consideration or decision of this case.

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